

MSD DESIGN SPECIFICATIONS FOR GREASE CONTROL EQUIPMENT

Grease Control Equipment Sizing:

Minimum acceptable size of GCE for each FSE Classification will be as follows:

- Class 1: Day Care Facilities, Deli, Ice Cream shops, Beverage Bars, Coffee Shops, Mobile Food Vendors- 25 gallons per minute/50 pound Grease Trap
- Class 2: Limited-Service Restaurants / Caterers – 1,000 gallon Grease Interceptor
- Class 3: Full Service Restaurants- 1,000 gallon Grease Interceptor
- Class 4: Buffet and Cafeteria Facilities- 1,500 gallon Grease Interceptor
- Class 5: Institutions (Schools, Hospitals, Prisons, etc) - 2,000 gallon GI or two 1000 gallon Grease Interceptors installed in series.

For GIs with discharges from a dishwasher, the GI size shall be increased a minimum of thirty percent (30%) of the sizing requirement. Thirty percent (30%) is required to prevent short-circuiting of the GI when the extremely hot water from a dishwasher is introduced to the GI.

Grease Interceptor (GI) Design and Installation:

Piping Design

1. Inlet and outlet piping shall have 2-way cleanout tees installed.
2. Inlet piping shall enter the receiving chamber 2 1/2" above the invert of the outlet piping.
3. On the inlet pipe, inside the receiving chamber, a sanitary tee of the same size pipe in the vertical position with the top unplugged shall be provided as a turndown. To provide air circulation and to prevent "air lock", a pipe (nipple) installed in the top tee shall extend to a minimum of 6" clearance from the interceptor ceiling, but not less than the inlet pipe diameter. A pipe installed in the bottom of the tee shall extend to a point of 2/3 the depth of the tank. **See illustration on page 5.**
4. The outlet piping shall be no smaller than the inlet piping, but in no case smaller than 4" inner diameter (ID).
5. The outlet piping shall extend to 12" above the floor of the GI and shall be made of a non-collapsible material. The top of the outlet T pipe should be no less than 4" above the static water line.
6. The outlet piping shall contain a tee installed vertically with a pipe (nipple) installed in the top of the tee to extend to a minimum of 6" clearance from the interceptor ceiling, but not less than the pipe diameter, with the top open. **See illustration on page 5.**

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Baffles

1. The inlet compartment shall be 2/3 of the total liquid capacity with the outlet compartment at 1/3 liquid capacity of the GI.
2. The GI shall have a non-flexing (i.e. concrete, steel, etc.) baffle the full width of the interceptor, sealed to the walls and the floor, and extended from the floor to within 6" of the ceiling. The baffle shall have an inverted 90 degree sweep fitting at least equal in diameter size to the inlet piping, but in no case less than 6" ID. The bottom of the sweep shall be placed in the vertical position in the inlet compartment 12" above the floor. The sweep shall rise to the horizontal portion, which shall extend through the baffle into the outlet compartment. The baffle wall shall be sealed to the sweep. **See illustration on page 5.**

Access Openings (Manholes)

1. Access to GIs shall be provided by a minimum of one manhole per GI division (baffle chamber) and of 24-inch minimum dimensions terminating 1 inch above finished grade with cast iron frame and cover. An 8" thick concrete pad extending a minimum of 12" beyond the outside dimension of the manhole frame shall be provided. One manhole shall be located above the inlet tee hatch and the other manhole shall be located above the outlet tee hatch, so as to provide a clear view of both the inlet and outlet T for inspection. A minimum of 24" of clear opening above each manhole access opening.
2. Access openings (manholes) shall be maintained to facilitate maintenance, cleaning, pumping, and inspections.
3. Access openings (manholes) shall be mechanically sealed and gas tight to contain odors and bacteria and to exclude vermin and ground water, in a manner that permits regular reuses.
4. Manhole covers shall be secure, sturdy and able to withstand vehicle traffic and loading

Leak Testing

GIs shall comply with one of the following:

1. **Water test** - Seal the interceptor, fill with water raised to the flow-line of the outlet fitting, and let stand for a minimum of 1 hour. There shall be no visible leakage. Prefabricated concrete gravity grease Interceptors shall not be rejected for damp spots due to condensation on the exterior surface.

Note: It is highly recommended that the water remain in the GI prior to initiation of usage. The GI will function better if it contains water upon initiation of usage.

2. **Air test** - Air test procedure shall follow STI F 921 and PEI RP 100 Section 3.

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Note: The regulated air supply test pressure used for this test is not to be less than 3 psig (21 kPa) nor more than 5 psig (35 kPa). Use only calibrated diaphragm type air pressure gauges with a zero to 10 psig dial span. Set pressure relief valve in test air supply line at 4.5 psig.

Temporarily plug, cap or seal of all tank openings to hold pressure. Install air supply piping to appropriate tank penetration with air supply piping, over pressure relief device, air isolation valve and pressure gauge. Close air isolation valve to tank and turn on air supply. Slowly open air isolation valve to pressure primary tank. Pressure gauge should read minimum 3 psig to 5 psig maximum. Record the pressure reading. Close air isolation valve and disconnect air supply line to tank.

Note: A steady drop in pressure indicates there may be a leak in the primary tank.

Hold primary air test for 1 hour minimum. No leaks shall be allowed.

If the tank(s) fails to meet the testing described above, it shall be repeated with new samples. Test reports shall show total number of tanks tested, number passing, number failing, and reason for failure.

Location

1. GIs shall be located so as to be readily accessible for cleaning, maintenance, and inspections. GIs shall be located close to the fixture(s) discharging the greasy wastestream(s).
2. GIs shall not be installed in “drive-thru” lanes or a parking area. GIs shall never be paved over.
3. GIs shall be installed at a minimum distance of 10 feet from sinks and dishwashers to allow adequate cooling of wastewater. The influent to GIs shall not exceed 140 degrees Fahrenheit (140° F).
4. Where garbage disposals are installed, the waste from those units may discharge directly into the sanitary sewer system or pass through the GI according to applicable plumbing codes. For GIs with discharges from a garbage disposal, the GI size shall be increased by 30% of the sizing requirement.

Size

1. GI minimum size shall be 1,000 gallon capacity, and maximum size will be 2,000 gallon capacity. If additional capacity is required, the FSE shall install multiple GIs in series.
2. For GIs with discharges from a dishwasher, the GI size shall be increased a minimum of thirty percent (30%) of the sizing requirement. Thirty percent (30%) is required to prevent shortcircuiting of the GI when the extremely hot water from a dishwasher is introduced to the GI.
3. GIs installed in series shall be installed in such a manner to ensure positive flow between the GIs at all times. Therefore GIs shall be installed so that the inlet invert of each

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successive GI shall be a minimum of 2 inches below the outlet invert of the preceding GI.

4. GIs installed in series shall have adaptors or gaskets or flexible transition couplings used as piping connections between the GIs installed in series. The adaptors or gaskets or flexible transition couplings shall be constructed of a minimum of schedule 40 PVC.

Construction Material

1. GIs shall be constructed of sound durable materials, not subject to excessive corrosion or decay, and shall be water and gas tight. Each GI shall be structurally designed to withstand any anticipated load to be placed on the GI (i.e. vehicular traffic in parking or driving areas). Concrete is the standard material approved by MSD, however, MSD will consider other materials, such as fiberglass or plastic grease interceptors, if a professional engineer (PE) provides calculations and evidence that the device will meet MSD requirements and not be a danger to the public, or environment.

Note: Concrete materials and other grease interceptor materials shall meet the American National Standards Institute, Inc. (ANSI) and International Association of Plumbing and Mechanical Officials (IAPMO) standards.

ANSI and IAPMO Concrete Materials Requirements as per IAPMO/ANSI Z1001-2007 document are:

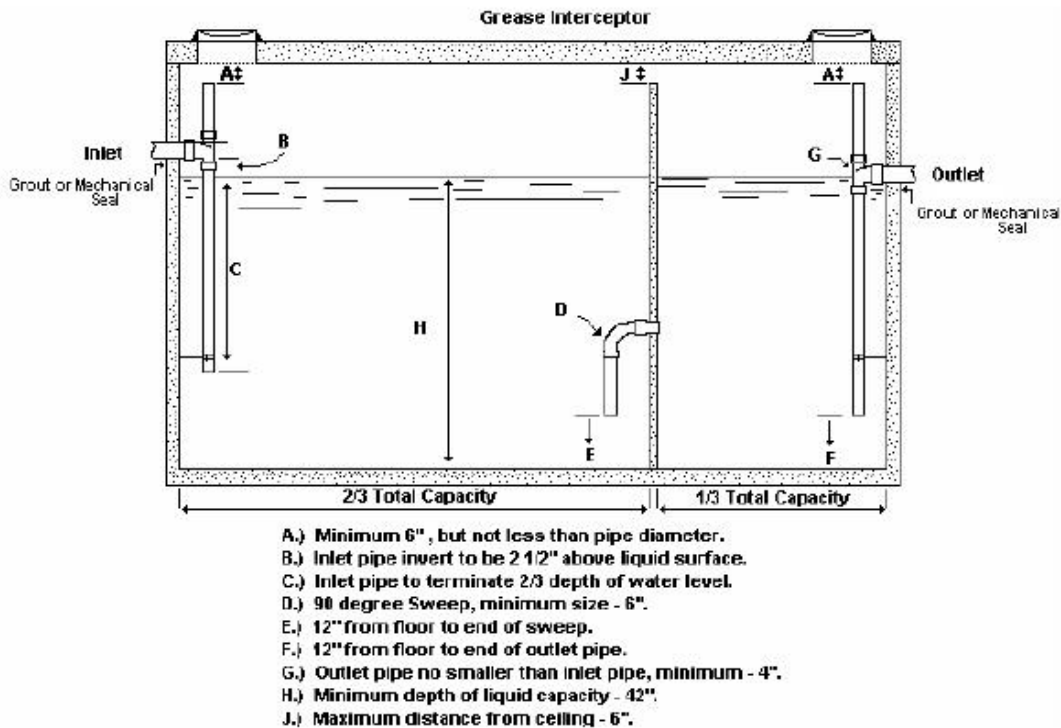
- **Concrete:** Material requirements shall comply with the “Materials and Manufacture” section of ASTM C 1613 and shall have a minimum compressive strength of 4000 psi (28 MPa) at 28 days of age and shall have a maximum water to cementitious ratio (w/c) of 0.45.
- **Sealants:** Flexible sealants employed in the manufacture or installation of GIs shall comply with ASTM C 990. Rigid (mortar) sealing or grout sealant of GI sections shall not be permitted.
- **Lifting:** Lifting devices, embedded or otherwise attached to the GI, shall comply with the requirements of ASTM C 890.
- **Synthetic fiber-reinforced concrete GIs:** Polypropylene or polyolefin fibers are only permitted as a secondary reinforcing material, at the manufacturer’s option, in precast concrete GIs. For the purposes of this standard, secondary reinforcing material is only used to resist temperature and shrinkage effects. Only fibers of Type III conforming to the requirements of ASTM C 1116 shall be accepted.
- **Steel fiber-reinforced concrete GIs:** Steel fibers are only permitted as a secondary reinforcing material, at the manufacturer’s option, in prefabricated GIs. For the purpose of this standard, secondary reinforcing material is only used to resist temperature and shrinkage effects. Steel fibers shall meet the requirements of ASTM A 820.

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- **6 Fiberglass-reinforced polyester.** Fiberglass reinforced polyester prefabricated gravity GIs shall comply with the requirements for fiberglass – reinforced polyester septic tanks in paragraph 4.2 of IAPMO/ANSI Z1000.
- **Gaskets:** Gaskets shall be of a resilient material, resistant to attack by acids or alkalis that may be present in soils or sewage. The manufacturer shall specify the appropriate ASTM standards that the gasket material meets and the acids or alkalis that the material is resistant to.
- **Polyethylene:** Polyethylene prefabricated gravity GIs shall comply with the requirements for polyethylene septic tanks in paragraph 4.3 of IAPMO/ANSI Z1000.
- **Coated steel:** Interior steel GI walls shall be coated with material complying with the requirements of UL 58 and UL 1746 and manufactured per the requirements of the Steel Tank Institute (STI).

Marking and Identification

1. Prefabricated gravity GIs shall be permanently and legibly marked with the following:
 - Manufacturer's name or trademark, or both
 - Model number
 - Capacity
 - Month and year of manufacture
 - Load limits and maximum recommended depth of earth cover in feet; and Inlet and outlet.
2. The marking shall appear on a plate that has been permanently attached, molded, cast, or wet set onto the GI, located either on the left hand side of the inlet or on top of the GI near the inlet. Permanent markings shall be adequately protected from corrosion so as to remain permanent and readable over the life of the GI.
3. Each GI shall be accompanied by manufacturer's installation instructions.

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Grease Trap (GT) Design and Installation:

1. GTs shall have the Plumbing Drainage Institute certification. The **minimum** acceptable size is rated at 25 gallons per minute / 50 pounds capacity. All GTs shall be installed as per manufacturer's specifications, which include the flow restrictor and venting prior to the discharge entering the GT.
2. GTs shall have flow control restrictor and be vented.
3. Dishwashers shall not be connected to an under-the-sink GT or floor GT. Dishwashers will cause hydraulic overload of the GT.
4. Any floor GT must be an approved "floor" trap that is able to be installed below the floor level. Many standard "under-the-sink" units are not made of proper materials that allow an in-floor installation. Unapproved floor trap units will rust and leak within a few months of operation.